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III. REMARKS BY T. G. RODGERS, Normal School of New Mexico.

On graduating from a state university several years ago I began teaching high school mathematics. I found that aside from the larger vision gained in undergraduate study in the university I was no better prepared to teach geometry than on completing the high school course. Observation soon convinced me that others too were teaching merely the geometry which they had learned in the high school. An introduction to projective geometry in subsequent graduate work was of benefit but left me still feeling inadequately prepared to teach elementary geometry as a living subject.

My continued search for better methods was finally rewarded through my forming an acquaintance with the works of Rouche and Comberousse, Henrici and Treutlein, and Hadamard. The study of these works has enriched my teaching of geometry to such an extent that I look back with regret to the years in which I tried to teach the subject with only such preparation as the colleges give and with the feeling that college curricula are badly balanced in respect to their preparation of teachers for high school mathematics.

It appears to me that at least one year's work should be given to the study of synthetic geometry, the first half being a lecture course based on works like those mentioned above (especially Hadamard) and the second half being the kind of course in projective geometry outlined by Professor Bussey in the November issue of the MONTHLY.

NOTES AND NEWS.

UNDER THE DIRECTION OF FLORIAN CAJORI.

Please note that the date on your address label for this issue is changed if your renewal subscription was received before January 10, 1914.

The October number of the *Monist* contains an article by Professor BERTRAND RUSSELL on "The Philosophical Importance of Mathematical Logic."

The November number of *School Science and Mathematics* contains an article entitled "A Thread of Mathematical History and Some Lessons," by Professor R. D. CARMICHAEL, of the University of Indiana.

The November number of the *School Review* contains an interesting paper entitled "The Cumulative Examination in Mathematics," by Mr. H. E. WEBB, of Newark, N. J. He suggests a series of cumulative examinations extending over the three or four years of high school mathematics.

Dr. Heinrich Burkhardt's "Theory of Functions of a Complex Variable" has been translated into English by Professor S. E. RASOR of the Ohio State University, and published by D. C. Heath & Company.

Spon & Chamberlain have published a book on "The Gyroscope: its Theory and Practise" by Dr. F. J. B. CORDEIRO, of the U. S. Navy. While abroad the author made a special study of the gyroscopic compass.

ALBERT W. WHITNEY, formerly associate professor of insurance and mathematics in the University of California, has become assistant actuary in the insurance department of the state of New York.

FRIEDRICH DINGELDEY'S *Sammlung von Aufgaben zur Anwendung der Differential- und Integralrechnung* (B. G. Teubner) contains a collection of problems on the application of the calculus to geometry and also to physics, chemistry and technology.

The Southwestern Section of the American Mathematical Society met at the University of Missouri, Columbia, Mo., on November 29, 1913. There were about twenty members present and twelve papers were presented at the two sessions. Those who read papers were Professors E. R. Hedrick, Louis Ingold, W. C. Brenke, W. D. Westfall, O. D. Kellogg, Drs. E. L. Dodd, S. Lefschetz, A. J. Kempner, H. Blumberg, Mr. A. R. Schweitzer and Miss E. A. Weeks.

The annual meeting of the American Mathematical Society was held in New York on December 30 and 31, 1913.

The American Association for the Advancement of Science held its annual convocation at Atlanta, Ga., during the week beginning December 29, 1913. The retiring president of Section A, Mathematics and Astronomy, was Professor E. B. Van Vleck, of the University of Wisconsin, who gave his address at this meeting on the "Influence of Fourier's Series on Mathematics." The new president is Professor Frank Schlesinger, of Allegheny Observatory, and the secretary is Professor F. R. Moulton, of the University of Chicago.

The Northeastern Ohio Teachers' Association met at Cleveland, October 24 and 25. At the departmental meeting on mathematics papers were read as follows: "How to make the transition from arithmetic to algebra," "What should be included and what excluded in first-year algebra," "Some specific suggestions for teaching the pupil how to attack originals in geometry."

Professor CARLO BOURLET of L'École Nationale, Paris, died August 12, as the result of injuries received in an accident. Aside from notable work as a lecturer in higher mathematics, he has contributed in an important way to the teaching of elementary subjects, chiefly through texts in both algebra and geometry.

The American Mathematical Society has accepted the invitation of Brown University, extended through the committee on the celebration of her 150th anniversary, to hold the summer meeting at Providence in September, 1914.

The first part of Tome II, Volume 6, of the *Encyclopédie des Sciences Mathématiques*, was published on September 15, 1913. This fascicule of 128 pages is devoted to calculus of variations, and was edited by M. Lecat. It is interesting to observe that a considerable part of the space is devoted to a consideration of the results obtained by American mathematicians. Foremost among these are the contributions by Professor OSCAR BOLZA, who returned to Germany a few years ago after having done very much to advance American mathematics, both

by his own work during his twenty years of residence here, and also by the inspiration which he gave to a large number of young investigators.

The *Mathematical Gazette* for July and October, 1913, contains an article by SYDNEY LUPTON on "The radix method" of computing logarithms, which possesses certain advantages when logarithms and antilogarithms are required to many places and, in default of tables, must be calculated. The method requires numbers of the form $(1 \pm r/10^n)$, with their logarithms to one or two places beyond those actually to be used. The method goes back to Briggs, 1624, and was simplified by Robert Flower, 1771, and further modified in 1786, by George Atwood of "machine" fame. The article contains many historical notes on the computation of logarithms. Several nineteenth century writers rediscovered the old method of Briggs and Flower.

During the Annual High School Conference held at the University of Illinois, November 20, 21, and 22, 1913, the following papers were presented before the mathematics section: "The use of the Courtis tests," by Professor L. D. COFFMAN, University of Illinois; "Statistical method in educational studies," by Professor A. C. LUNN, University of Chicago; "Bibliography on methods of grading," by Mr. H. C. ZEIS, University of Illinois. There was also held a "Round table discussion on methods of grading." According to the program, "All superintendents, principals and high school teachers, as well as teachers in academies, normal schools, colleges and universities are invited to be present and participate in the discussion."

The Central Association of Science and Mathematics Teachers held its thirteenth annual meeting at Des Moines, Iowa, on November 28 and 29, 1913. Professor Florian Cajori was one of the leading speakers at the opening general session and also at one of the sessions of the mathematics section. At the former he spoke on "Science and mathematics in vocational schools; a retrospect," and at the latter on "Means of measuring mathematical abilities." Other numbers on the two programs of the mathematics section were: "Report of a committee on vocational mathematics," by R. L. Short of Cleveland, Ohio; "Report of a committee on examinations and results" by C. E. Comstock of Peoria, Ill., and a paper on "The traditional examination in mathematics" by Jane V. Pollock of Kenilworth, Ill. The report on vocational mathematics was discussed by Professor G. A. Smith, Iowa City, W. Lee Jordan, Des Moines, and W. G. Swartz, Gary, Ind. The association is one of the largest and most active in the secondary field. The mathematics section has put forth at various times some important reports which have had wide influence; in particular, its report on algebra some years ago had a circulation of over ten thousand copies and has without doubt had a marked influence on most of the texts on elementary algebra published since that time. This association was organized in Chicago in 1901 and most of its meetings have been held in Chicago.

The Chicago Section of the American Mathematical Society held its thirty-second regular meeting at the University of Chicago on December 26 and 27,

1913. There were thirty-five papers on the program and 56 members were in attendance. The Chicago section was organized in 1897 and has steadily grown in importance both as to the number of members of the Society attending its meetings, and as to the number of scientific papers presented. The Society itself was organized in New York in 1894, and the regular meetings of the Society are usually held in New York (see a paper on "Western Meetings of Mathematicians" in the April, 1913, issue of the MONTHLY). The Council, however, has recently voted to designate the meetings of the Chicago section as "meetings of the Society at Chicago," and the meeting just held was the first under this designation. In honor of the occasion the University of Chicago tendered a complimentary dinner to the members present.

The *Mathematical Gazette* for October, 1913, contains an exceedingly interesting account, by Dr. C. G. KNOTT, of the Edinburgh mathematical colloquium, held last August, at which three courses of lectures were given, respectively, by an Englishman, E. P. WHITTAKER; an Irishman, A. W. CONWAY; and a Scotchman, D. M. Y. SOMMERVILLE. Conway discoursed on the theory of relativity; Whittaker explained in his mathematical laboratory practical harmonic analysis and periodogram analysis; Sommersville expounded non-euclidean geometry. We quote the following:

"Professor Whittaker chose for his working data the light periods of two variable stars, the one to illustrate the periodigram method of discovering unknown periods, the other to illustrate the analysis into harmonic components of a given periodic variation. The theory of the Fourier analysis was incidentally given; and the last lecture finished with an account of Mäder's Harmonic Analyser."

"This hour of practical work, combined with demonstrations, involving only the familiar circular functions, gave the necessary balance to the weird imaginings of the other two courses. Without it to bring us back to the obvious world of apparent realities we should have been floundering hopelessly in the Absolute or in Minkowski's *Welt*. After we had been taught that velocities did not compound according to the parallelogram law, it was a positive delight to find that the Fourier series remained ordinarily additive; and with this in possession we had no great difficulty in apprehending the possibility of a space devoid of parallel lines. . . ."

"We learned many things. We were told that even if the theory of relativity were not true it had taught us truths. The tendency of modern physical theory was in the direction of still further atomising the atom; yet it was necessary in geometry to have an assumption of continuity, so that all possible numbers might be brought into correspondence with an infinitude of points on a finite line. The dictum of the logician that we cannot define by means of a negation seemed to have no terror to the modern geometer with his glib talk on non-Euclidean, non-Pascalian, non-Desarguesian, and even non-Archimedean."

In the spirit of the editorial statement on the first page of this issue, the action recently taken by the mathematics teachers of California, as indicated in the following communication, is most significant. The editors of the MONTHLY appreciate the compliment and recognize the responsibility which this action implies. We congratulate the teachers of California upon being pioneers in taking such a bold, forward step.

The communication, under date of January 2, 1914, is from Professor Henry W. Stager, of Fresno Junior College, chairman of the mathematics section of the California High School Teachers' Association, and is addressed to the teachers of mathematics in the secondary schools of California. It reads as follows:

"At the summer meeting of the Mathematics Section of the California High School Teachers' Association, a Committee, composed of Professor D. N. Lehmer, Miss S. Gilmore, and Professor G. A. Miller, was named to consider ways and means of broadening the scholarship of secondary school teachers. The Committee recommended the reading of the book, *Mathematical Monographs*, by J. W. A. Young in collaboration with other mathematicians, and further stated: 'In connection with this book, or even instead of it, the reading of some elementary but strictly first class journal is also recommended. Where it is possible for a number of teachers to meet frequently for the discussion of problems and short articles this plan has much to commend it. For this purpose the Committee would recommend the AMERICAN MATHEMATICAL MONTHLY.'

"The report has been adopted unanimously. The movement for a higher standard of efficiency is one of the strongest attempts to increase the quality of the teaching of mathematics ever made in California. It began with the teachers themselves and only needs your coöperation to make it a success. I commend the report of the Committee to your most earnest consideration.

"At this time I wish especially to call your attention to the reading of a first class journal. I have gone over with care the first volume of THE AMERICAN MATHEMATICAL MONTHLY under the new organization and find it well fitted for this purpose. I am personally acquainted with many members of the Publication Committee and with all the members of the Editorial Committee. The men are in the forefront of the present movement toward a higher standard for the teaching of mathematics in the United States. The MONTHLY represents the best in its field. I commend it to you, feeling sure that it will prove of very great benefit to you, will help to increase your efficiency, and will be a continual source of inspiration to you.

Yours, for the better teaching of mathematics,

HENRY W. STAGER.